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Electoral Bias at the 2015 General Election : Reducing Labour's electoral advantage

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Abstract

Electoral bias results in an asymmetrical seat distribution between parties with similar vote shares. Over recent British general elections Labour held an advantage because it efficiently converted votes into seats. Following the 2015 election result this advantage has reduced considerably, principally because Labour's vote distribution saw it accumulate more ineffective votes, particularly where electoral support was not converted into seats. By contrast, the vote distribution of the Conservative party is now superior to that of Labour because it acquired fewer wasted votes although Labour retains a modest advantage overall because it benefits from inequalities in electorate size and differences in voter turnout. Features of the 2015 election, however, raise general methodological challenges for decomposing electoral bias. The analysis, therefore, considers the effect of substituting the Liberal Democrats as the third party with the United Kingdom Independence Part. It also examines the outcome in Scotland separately from that in England and Wales. Following this analysis it becomes clear that the method for decomposing electoral bias requires clearer guidelines for its application in specific settings.

Introduction

In the three decades following World War II two parties predominated at general elections in Britain, securing over 90% of both the votes cast and seats in the House of Commons. From 1974 onwards the party system changed as three smaller parties then began to make an impact: in Scotland and Wales nationalist parties (the Scottish National Party – SNP – and Plaid Cymru, respectively) won a significant share of the votes there and some parliamentary seats; and across the whole of Great Britain, the Liberal party increased its share of both votes and seats. None of these three parties won a share of the seats commensurate with their vote share, however: the two largest parties – Conservative and Labour – still held most seats in the House of Commons even though their joint vote share declined. Great Britain essentially remained a two-party system, with much smaller third parties.[1]

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[1] Throughout this discussion we omit any discussion of the situation in Northern Ireland where generally speaking, from 1974 onwards none of the Great Britain parties contested seats there and an entirely separate party system subsequently evolved.

That situation altered towards the end of the 20th century as one of these smaller parties, the Liberals (and their successors; hereafter referred to by the name of the current party – the Liberal Democrats), increased the number of seats won by focusing campaigning efforts on a small number of constituencies. By the start of the new century Britain appeared to be settling into more of a three-party system. At the same time, two other smaller parties made an increasing impact in terms of vote share – the Green party, which won a single seat in 2010; and the United Kingdom Independence Party (UKIP) which first won a parliamentary seat at a 2014 by-election.

This approximation to a three-party system with a number of smaller competitors (the SNP, Plaid Cymru, UKIP and the Greens) was substantially re-configured by the 2015 election result. The Liberal Democrats, capturing almost one in four votes cast and 57 seats at the previous election in 2010, saw vote share decline by two-thirds and seats reduced to just eight. The Greens and UKIP both increased vote shares substantially (to 4 and 13% respectively), but each won only a single seat; and Plaid Cymru retained its vote share (1% only of the Britain-wide vote; 12% in the 40 Welsh constituencies) and three House of Commons' seats. And there was a major change in Scotland: in 2010, the SNP won 2% of the votes (20% in the country's 59 constituencies) and six seats; five years later it won 5% of the national vote (but 50% of those cast in Scotland) and 56 seats. So the previous three-party system was transformed; two parties continued to dominate both vote share and the number of MPs (though less so than ever before in the latter case) and five other parties occupied lesser positions with four of these getting very few seats – the Liberal Democrats, Plaid Cymru, UKIP and the Greens won just 13 seats (out of 631 contested across Great Britain) despite jointly winning more than a quarter of votes.

Like most countries using a single-member plurality voting system Britain's elections have been characterised by disproportional outcomes, particularly so since the 1970s. The extent of this disproportionality can be assessed for individual parties (the ratio between percentage seats and votes) and for the system as a whole using different measures (Taagepera and Laakso 1980, Grofman 1983; Gallagher 1991; Borisyuk et al. 2004). What is less readily assessed is the system's bias. From the 1970s on, analysts noted that the various British parties were not treated equally in the translation of votes into seats (the classic work is Gudgin and Taylor, 1979; see also Rossiter et al., 1999, and Johnston et al, 2001): with the same share of the votes cast one party would obtain a larger share of the seats than its opponents. This became particularly clear at the 1997, 2001 and 2005 general elections when it is estimated that the Labour party won 82, 141, and 111 more seats than the Conservatives would have done with the same vote shares at those three contests (Johnston et al. 2006). This pro-Labour bias was evaluated using a method developed for analysing bias in two-party systems, as discussed below, but became less valid to the evolving three-party situation: this was eventually addressed by extending the method so that it could be used for three-party systems, with analyses of bias focussing upon the Conservative, Labour and Liberal Democrat parties (see also Calvo and Rodden's recent extension (2015) of Gudgin and Taylor's classic work to that three-party situation).

The 2015 election result presents a new and different challenge when decomposing electoral bias, however, because there is no longer a clear third party (see Table 1). In terms of overall vote share, UKIP came third and the Liberal Democrats – traditionally the third party– only fourth, although the Liberal Democrats did win seven more seats than UKIP. Additionally, there are now major differences across the country: the SNP is clearly the first party in Scotland with Labour relegated into second place. What then, is the most appropriate way of measuring bias following an outcome

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that is as diverse as the 2015 result? Does the collapse of the Liberal Democrats mean that it is now best conceptualised as a largely two-party system or does the three-party method remain valid in so far as it helps to explain how bias altered between the 2010 and 2015 elections? Is there an argument for replacing the Liberal Democrats with UKIP as the third party, despite the latter's failure to win seats? And is it still valid to address bias distribution across the whole system when the result in Scotland is so different to that elsewhere? Such questions are of broader interest and raise methodological challenges for the study of electoral bias.

The article begins with a brief outline of what electoral bias means and the different components that contribute towards it. Next, there is a more detailed summary of the 2015 general election result which highlights how the particular vote and seat distributions now raise important questions about the method for understanding bias. The subsequent analysis of that bias takes three different perspectives. First, we measure bias components according to the three-party method, continuing to identify the Conservative, Labour and Liberal Democrats as the parties of interest. Second, we substitute the Liberal Democrats with UKIP in order to gauge the effect of introducing a third party that wins votes but not seats. Finally, we consider the implications of departing from the standard practice of examining bias across the whole country and instead view it across two separate geographies, namely Scotland versus England and Wales.

Decomposing electoral bias

As stated earlier, electoral bias becomes evident when similar parties (in terms of vote share) are affected by the voting system in dissimilar ways. A method for de-composing bias for a two-party system was developed by Ralph Brookes (1960) and later adapted to take account of party systems with two main parties and a third party winning some seats (Johnston et al. 1999)[2]. Next, a more substantive adaptation permitted bias decomposition for a three-party system (Borisyuk et al. 2008; 2010). Detailed descriptions of the method and how it is applied may be found in those publications and only a broad outline is provided here.

Brookes contended that the factors where one party was favoured over another could be separately identified and their overall effects upon the election outcome calibrated in terms of relative advantage in seat distribution. There are four factors involved and these relate to: vote distribution (often referred to as 'geography') for each party across those constituencies where it stands candidates; inequalities in the size of each constituency's electorate ('malapportionment'); electoral turnout in constituencies (although Brookes' preferred term is 'abstention'); and finally, the impact of minor parties. Additionally, the method allows for and calculates net interaction effects between these four components. The size of the various bias components are shown as either positive or negative whole integers – a party that benefits by winning many of its seats in low turnout constituencies, for example, would probably be shown to have a positive bias from this effect. The nature and direction of overall bias in the system is shown by simply summing the positive and negative measures on each component for each party. In the extension of Brookes' methodology to a three-party system, the same approach is deployed.

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[2] Soper and Rydon (1958) develop another method for considering bias.

Overview of the 2015 general election

At the 2015 general election the Conservative party increased its representation by 24 to 330 seats (an 8% increase), giving it a Commons' majority of twelve,[3] although its vote share rose by less than one percentage point (Table 1). Despite polling three-quarters of a million more votes than it did in 2010 the Labour party suffered a net loss of 26 seats. The fraction of voters supporting the two main parties combined changed only slightly between the two elections while the proportion of Conservative and Labour MPs in the new Parliament remained as it was before the election.

Table 1 about here

Although the percentage of seats won by parties other than the 'big two' is unchanged its distribution is not with the Liberal Democrats and the SNP exchanging positions. The Liberal Democrats lost 49 of their 57 seats but the SNP won 56 seats, an increase of 50 from the previous election. Labour is the principal victim of the Nationalist's advance in Scotland, losing all but one of its former 41 seats; the Liberal Democrats lost ten of their eleven Scottish seats to the SNP. A third feature of 2015 lay with UKIP which supplanted the Liberal Democrats as the third most popular party (almost four million votes nationwide) but also set an unenviable record for a party winning the highest vote share for lowest return in seats – over one in eight votes were cast for 624 UKIP candidates but only one of these (Douglas Carswell in Clacton) was elected. The Green party retained its single seat but acquired 1.2 million votes across the 573 seats that it contested. With the Liberal Democrats slumping to fourth place, the combined vote for the three traditional Britain-wide parties was 77%, by some distance the lowest in British electoral history.

The 2015 election provides a clear example of plurality voting favouring large parties – with 37% of the UK-wide vote the Conservatives obtained more than half the seats while Labour too won a larger proportion of seats than votes. Plurality systems may also benefit smaller parties that focus on specific geographies; in 2015 the SNP won almost 9% of the seats with under 5% of the national vote, by any standard an unusually large seat/vote ratio. Smaller parties whose vote is broadly distributed are disadvantaged by the voting system; in 2015 one in four votes were cast for the Liberal Democrats, UKIP and the Greens combined but those parties won just ten seats overall.

Evidence of the dramatic change at the constituency level is revealed in Table 2. The first column shows the winning party and each row identifies the party that finished in the runner-up position. The configuration of first and second places has an important bearing upon bias distribution. In 2015, Labour came second in 207 constituencies that returned a Conservative MP – 63% of cases (in 2010 it finished as runner-up in just 137 of the 306 Conservative seats, or 45%). Conservative candidates finished in second place in 168 of Labour's seats, or 72% of the total won (as against 147

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[3] In effect the majority is slightly larger as the four Sinn Féin MPs do not take their seats.

of 258 seats – 57% – in 2010). In many parts of the country, therefore, the 2015 election marked the return of a more clearly defined battle between the two largest parties (Johnston et al. 2016).

Table 2 about here

The Liberal Democrats not only lost seats, but finished in second place in just 63 constituencies (compared to 243 in 2010); they were placed fourth in almost ten times as many constituencies (338) as they were placed third (36). By contrast, UKIP finished in second place in 120 constituencies – 44 of them Labour-held; in 2010 the party came second in a single constituency. Scotland, of course, represents a special case not only because a single party won so emphatically there but also because Labour finished second in 73% of the 56 seats secured by the Nationalists.

Tables 1 and 2 demonstrate that the distribution of votes and seats following the 2015 election are substantially different than previously and justifies our approach in assessing electoral bias from a number of perspectives. These are: first, the standard three-party approach of considering the Conservative, Labour and Liberal Democrat parties (thereby facilitating direct comparisons with the outcome at the 2010 election); a second approach which substitutes UKIP for the Liberal Democrats as the third party; and finally separate assessments that acknowledge territorial differences between Scotland and England/Wales.

Decomposing three-party bias

It was the emergence of the Liberal Democrats as a significant electoral force that prompted the need to de-compose three- rather than two-party bias. Although Brookes' original method required extension his original approach that the actual election outcome should be compared to a 'notional' election was retained. In the case of two parties competing this effectively means reversing the vote shares obtained by each party in addition to the actual election outcome. It is the combination, or 'superposition', of the actual election with this notional election that becomes the norm for comparison that provides the expected unbiased number of seats for each party (Borisyuk et al 2010).

Of course, when three parties are competing the procedure becomes slightly more complex to operationalise, although the guiding principle is the same. Consider three parties, A, B and C ranked in order of their finishing electoral position with overall vote shares, α, β, and γ respectively, where ($\alpha + \beta + \gamma = 100$). The procedure for assembling the superposition then considers all six possible configurations for these parties – the actual finishing position (ABC) together with five further notional elections, viz., ACB, BAC, BCA, CAB and CBA (Borisyuk et al. 2010, pp 738-739 but see Blau 2001 for criticisms of the application of swing in simulated elections of this type). For each of these configurations the vote share of the largest, second and third parties are fixed at the level of the actual election. The configuration BCA, for example, represents a notional election in which party B instead becomes the largest party receiving α% share of the vote. Correspondingly, parties C and A

finish second with β% and third with γ% of votes respectively. Following this procedure the method compares the actual number of seats won by each party with the expected unbiased number of seats obtained from construction of the norm of comparison that is derived from the superposition of the six separate configurations ABC, BAC,…, CBA.

Decomposition of three-party bias for the 2015 general election is shown alongside that for the previous election (Table 3). While the two main parties continue to benefit from the operation of the voting system Labour's relative advantage over the Conservative party is now drastically reduced. The bias disadvantage suffered by the Liberal Democrats is much smaller than it was in 2010 but this is because the party attracted far fewer votes in 2015 and therefore its failure to capture seats becomes less about the operation of electoral bias and relates more to the expected vulnerability for a relatively small party with dispersed support. Overall, there is less bias evident in the 2015 result (about 19 seats) compared to the 2010 outcome. Indeed, across the eight general elections from 1983 onward the bias in 2015 is smaller than all others with the exception of 1997 when Labour dominated (Johnston et al. 2012). Below, the separate bias components are examined in order to understand how this important transformation in the relative positions of the two main parties came about.

Table 3 about here

Geography

The overall pro-Labour bias deriving from the vote distribution component amounts to 12 seats, double that of the Conservatives. However, more interesting is that while the positive bias for the Conservatives halved in size between 2010 and 2015 there was a five-fold decrease for Labour. The largest single element in this reduction was the geography associated with Labour's vote distribution, which had given the party a 31-seat advantage in 2010 but now a deficit of ten seats; Labour's votes were much more inefficiently distributed across constituencies in 2015 than 2010, in large part because of the many votes wasted in the 41 Scottish seats lost to the SNP. The geography component also largely explains the small drop in overall bias favouring the Conservative party – a 36-seat advantage from 2010 reduces to 28 seats but this now gives the Conservatives a considerable edge in the efficiency of its vote distribution over Labour, a reverse of the pattern seen in the previous three elections (Thrasher et al. 2011; Johnston et al. 2012). Indeed, almost half of the benefits accruing to the Conservatives from the geography component are derived from Labour[4]. Since the relative efficiency of each party's vote distribution is playing such a significant role in explaining the change in electoral bias it should be examined in more detail.

If we assume that gathering support costs a party resources, the most efficient vote distribution under first-past-the-post is for each party to secure its victories without accumulating large

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[4] As demonstrated in earlier papers (Borisyuk et al. 2008, 2010), it is possible to indicate for any bias component that advantages a party how much of that bias derives from comparing its position in terms of vote distribution/level of abstention /size of electorate/minor party votes with that of each of its opponents.

majorities. Strictly speaking, any majority larger than a single vote is comprised of 'surplus' votes. Equally, for any party there is little point in gathering support in each constituency if the number of votes acquired falls short of the winning total; votes received in a lost cause are 'wasted'. Parties that ignore both of these strategies accumulate 'ineffective' votes (surplus and wasted votes combined).

Table 4 itemises 'ineffective' vote totals for the Conservative, Labour and Liberal Democrat parties over three general elections in order to demonstrate how the pattern is changing. It is clearly beneficial for a party to win seats with fewer votes than its rivals. In this respect the trend for the Conservative party is in the right direction; it received an average of 34,214 votes per seat gained in 2015 compared with 41,820 votes in 2005. The Conservatives obtained about the same number of votes per seat won in 2015 as in 2010 but won an additional 24 seats with its performance: its vote distribution was clearly more efficient at the second of the two contests. By contrast, for its two rivals (Labour and the Liberal Democrats) the pattern moves in the opposite direction with Labour at about forty thousand votes per seat won in 2015 – an almost 50% increase on its 2005 figure. The trend for the Liberal Democrats describes a small third party losing its niche in a predominantly two-party system.

Table 4 about here

The key to understanding how the Conservatives improved their relative position lies in comparing the parties' ineffective votes as a percentage of the votes per seats won. The smaller that percentage, the more efficient a party's vote distribution. In 2015 this is 64% for the Conservatives, actually a small increase on the 2010 result. For Labour, however, this percentage is rising, up from 60% in 2005 to 73% in 2015 resulting in 6.8million of Labour's total 9.3million votes categorised as ineffective. For the Liberal Democrats, once celebrated for targeting votes, the 2015 election signals a clear failure; all bar 100,000 of its 2.4 million votes were ineffective.

But why were Conservative votes more efficiently distributed in 2015 than their rivals'? Figures 1a-c, which show party vote share at the constituency level, provide a clearer explanation stemming from the particular distributions of surplus and wasted votes. In each graph surplus votes acquired by the relevant party appear above the zero line while its wasted votes and the party winning the seat are shown below it. The efficiency of each party's vote distribution can be measured by how close its constituency-level votes are adjacent to the zero line.

Figure 1 about here

Figure 1a thus describes the accumulation of wasted votes in the 330 seats won by Conservative candidates above the horizontal axis; below that line it shows the wasted votes in 301 constituencies where its candidate stood but lost. Surplus Conservative votes for each constituency are ranked in order from the smallest majority to the largest. The shading used for each bar (constituency) indicates the party coming second in the case of these Conservative seats – Labour is dark grey,

Liberal Democrats are horizontally patterned and other parties (mainly UKIP) appear as light grey. In 124 of the Conservative seats (38%) the majority is under 10,000 votes while in only 69 cases (21%) does it rise above 20,000 votes. Wasted votes accumulated by unsuccessful Conservative candidates are shown below the horizontal axis with the bar shading indicating the party that won the seat; most of these 'others' are SNP victories and it is clear that Conservative candidates accumulated very few 'wasted' votes here. There are 130 constituencies (43% of the 301 seats where Conservative candidates were not elected) where losing Conservative candidates received 10,000 or more wasted votes.

Comparison of the separate geographies of the Conservative and Labour vote reveals significant differences. Labour's vote is distributed more effectively than that of the Conservatives in terms of surplus votes. In Labour's victories almost half of the 232 seats has a majority of under 10,000 votes whereas in just over 10% of its seats does the majority exceed 20,000 votes. Labour clearly had the edge over the Conservatives in the matter of 'surplus votes' because it won fewer seats (relatively and absolutely) by large absolute margins. In terms of 'wasted votes', however, the positions reverse with the Conservatives having the better vote distribution. In 83% of the 301 seats it failed to win its candidate attracted the support of fewer than 15,000 voters, thereby curbing its accumulation of wasted votes. For Labour the corresponding percentage is much lower – in only two-thirds of the constituencies it lost did the party garner fewer than 15,000 votes. In short, in respect of ineffective votes in a first past the post voting system, while Labour was better than the Conservatives at following the strategy of 'win small' it was certainly inferior in terms of 'losing big'.

Given that the Liberal Democrats were reduced to just eight seats it seems more appropriate to ignore surplus votes (only in party leader Tim Farron's seat of Westmorland and Lonsdale was there a significant number) and focus instead on wasted votes. In 57% of the 623 constituencies where it lost, the party attracted more than 10,000 votes while there are 186 (30%) constituencies where wasted votes exceeded 15,000 votes. It is unsurprising that the geography component in general, and wasted votes in particular, account for virtually the whole of the party's negative bias in 2015.

Another important feature of vote distribution is whether or not a party converts its constituency support into victory. Figures 2a-c demonstrate that capacity for victory where each column represents a parliamentary constituency and vote share (ranked from lowest to highest) received by the Conservative, Labour and Liberal Democrat parties respectively. Dark bars indicate that the seat was won – any party obtaining over half the votes is assured of victory, of course. Dashed horizontal lines identify a critical boundary where the party receives between 30-40% of the constituency vote and that particular segment of each party's vote share distribution is extracted and magnified to improve visual inspection of seats won or lost.

Figure 2 about here

A crucial feature of the 2010 result was Labour's superior ability in converting vote share into victories. Then, it captured 57 out of 148 seats (39%) where its candidate polled between 30-40% of the constituency vote (Thrasher et al. 2011, p 290). By contrast, only a quarter of Conservative candidates and only one in eight Liberal Democrats secured victory in the same circumstances. It is immediately clear from Figure 2b that in 2015 Labour lost this significant advantage, winning just 20

of the 117 seats in the critical range (and most of these were very close to the 40% boundary), under half its success rate of five years earlier. The Conservatives fared better than Labour in converting votes to seats in 2015 although slightly less well than was the case five years before: a party is more likely to win a seat with 30-40% of the votes if two opponents perform relatively well – such as Labour and UKIP in many Conservative-won seats in 2015. It is scant consolation for the Liberal Democrats that their success rate in 2015 was better than in 2010.

Malapportionment

Table 3 revealed that the Conservatives suffered from malapportionment (a negative bias of eight seats) but, historically, the negative bias for the Conservatives following boundary changes implemented for the 1983, 1997 and 2010 elections (-9, -10 and -7 seats respectively) is of similar magnitude to the -8 seats in 2015. In other words, because the electorate figures used by the various boundary reviews are already out of date when the final recommendations are presented the rate of demographic change (and the extent to which it adversely impacts upon the Conservatives) means that it is not necessarily guaranteed that the malapportionment bias is removed entirely by boundary changes. In any case, Labour's substantial advantage from 'creeping malapportionment' in earlier decades leaving them with smaller-than-average sized constituencies as the map 'aged' is no longer as important. There are fewer major inner city clearance schemes with many such areas now being re-populated.

Table 5 about here

Table 5 describes the range of electorates in seats won by the three parties in 2015. The mean electorate is highest in Conservative seats and lowest across the eight constituencies won by a Liberal Democrat. The maximum electorate for the Conservatives (108,804) is the Isle of Wight constituency. The low mean electorate figure for the Liberal Democrats is clearly affected by the inclusion of Orkney and Shetland, which had under thirty five thousand electors. Recalculating the Liberal Democrat figures without this constituency takes the mean electorate to nearer seventy thousand electors. The party's modest advantage from the electorate bias component would have reduced had it lost the Orkney and Shetland seat.

Abstention

Abstention bias traditionally favours Labour because its MPs are more likely to be elected in low turnout constituencies. Turnout across Britain in 2015 (at 66%) showed only a marginal increase on the previous election but Labour's advantage from this bias component rose from 13 to 16 seats. This is just short of the 18 seat pro-Labour bias that followed the record low general election turnout

in 2001. Conversely, the relatively high turnout across Conservative-won seats and especially in the strong competition encountered in Liberal Democrat constituencies, meant that abstention bias was negative for both – -12 seats for the former and -4 seats in the latter case. The last four general elections have seen the abstention component disadvantage the Conservatives in the range of 11-14 seats.

Table 6 about here

Table 6 shows percentage turnout in seats won by the main parties. The mean turnout in Conservative seats was seven points higher than in Labour seats. The SNP performance largely explains the significant increase in mean turnout in the 'others' category. .

Minor party votes and net interaction effects

Geography, electorate size and abstention often account for most of the electoral bias but the Brookes method also measures the impact of minor party votes as well as net interaction effects between separate components. In the case of the standard three-party method the 'minor' parties include the nationalist parties, Greens, UKIP etc. The bias from this component in 2015 is extremely small, with Conservatives and Liberal Democrats advantaged by just one seat each and Labour disadvantaged by two seats. The net interaction effects are also small but the Conservatives have a negative bias of 5 seats (most likely as a result of high turnout in constituencies with over-sized electorates).

A new three-party system?

An alternative approach to the standard three-party bias decomposition is to substitute UKIP for the Liberal Democrats while retaining the Conservative and Labour parties. Although only one UKIP candidate was successful, the party's national vote share places it third, five percentage points ahead of the Liberal Democrats. An indication of UKIP's intervention is its impact upon the traditional three-party vote of Conservative, Labour and the Liberal Democrats. Between 1992 and 2010 these parties occupied the top three positions in order of vote in 98-99% of all constituencies across England. In 2015 only 55 constituencies, 10.3% of the total, follow this pattern. Instead, some 416 (78%) English constituencies, had Conservative, Labour and UKIP candidates finish in the top three places.

The method proceeds as before but instead uses the distributions of the combined Conservative, Labour and UKIP vote shares to establish the norm of comparison. Following this procedure, Table 7 describes the various bias components and shows Labour, with a net positive bias of 38 seats, as the clear beneficiary when UKIP is treated as the third party. The system appears neutral for the Conservatives but there is a clear negative bias of 28 seats for UKIP, virtually all of which stems from

its poor vote distribution which assists mostly Labour but the Conservatives also. Labour's advantage is consolidated by electorate and abstention bias components relative to the Conservatives. UKIP failed to concentrate its support, something which smaller parties in a plurality system must do in order to secure seats (on which see Goodwin and Milazzo, 2015). The mean constituency vote share for UKIP candidates was 13%, close to its national vote share, and there is only a marginal rise to an average of 19% in the 120 constituencies where UKIP finished second.

Table 7 about here

How does this approach to three-party bias compare with the earlier analysis? One important consequence of choosing UKIP as the third party is that the bias components no longer sum to zero where total positive bias is (more or less) equal to negative bias. The reason for this is that when the three-party bias method constructs the norm of comparison it comprises six scenarios. It was not envisaged when the new method was being developed that the number of seats won by 'other' parties would vary across these scenarios. In fact, given the electoral arithmetic of the 2015 election this is precisely what is happening after UKIP is incorporated as the 'third party' and the Liberal Democrats are relegated into the ranks of 'others'. Under different re-configurations of the actual election there are occasions when the number of seats 'won' by the Liberal Democrats rises substantially. The same problem does not arise in the case of the SNP's victories simply because these wins are geographically located and are by relatively high margins.

The effect of using UKIP in this manner serves to highlight the fact that Brookes' approach to bias decomposition is concerned with determining the efficiency of the translation of votes into seats and UKIP's failure with such a relatively large vote to secure only a single seat means the method probably does not function as it was originally intended.

Electoral bias across different geographies

Use of Brooke's two-party analytical procedure assumes that the system's two largest parties occupy the first two places in most constituencies. This applied to Great Britain in the 1950s and 1960s, but not thereafter, hence the need to expand the method for three parties. Even so this has its drawbacks because – as Johnston and Pattie (2011) observed – very few indeed of the seats contested at the elections from 1974 to 2010 inclusive had three (or even four in the case of Scottish and Welsh constituencies) parties strongly contesting the constituency: almost all were – in effect – two-party contests, with different pairs of parties occupying the first and second places in different parts of the country and the third party – Conservative in some areas, Labour in others, and the Liberal Democrats in a third group – presenting no challenge to the two others.

The situation after the 2015 election is even more complex. At the 2010 contest, almost all of the British constituencies fell into one of four groups: those with the Conservative and Labour candidates occupying the first two places (284 seats): those with the Conservative and Liberal Democrat parties in those positions (205 seats): those where Labour and the Liberal Democrats came either first or second (92 seats); and those where the first two places were occupied by Labour

and SNP candidates (30 seats). In 2015 those same four categories contained 375, 50, 11 and 42 seats respectively. In addition there were 76 seats where the Conservative and UKIP candidates occupied the first two places and 44 seats where they were occupied by Labour and UKIP candidates. In many of these seats UKIP was not far ahead of the third-placed party's candidate (Johnston et al., 2016) so that these new 'two-party systems' were very different from their predecessors, making evaluation of bias there using the 'conventional' measures problematic.

This geography of different competition types raises questions about a 'national' evaluation of bias. This becomes readily apparent in the case of Scotland, when the SNP's virtual hegemony in 2015 made the situation there very different from the outcome across the rest of Great Britain. Although SNP members easily comprise the third largest grouping in the new Parliament its national vote share is less than half that of UKIP since it only stood 59 candidates. Clearly, it is impractical to regard the SNP as a Britain-wide party and for this part of the analysis, therefore, we analyse bias across two separate geographies, Scotland and England/Wales. In the case of Scotland we focus on the three largest parties there in order of vote share, SNP, Labour and Conservative (Table 8).

Table 8 about here

First and foremost, Scotland illustrates how disproportionality differs from electoral bias. The SNP received half the votes cast and yet won 95% of the seats, a clear example of the exaggerated 'winner's bonus' under plurality voting (as initially noted by Rae, 1967). But there is also bias in the Scottish outcome with the SNP receiving a positive bias of four seats (after rounding). This may not seem like a large number but it must be remembered that there are only 59 seats in Scotland and therefore those four seats represent about 15% of the total; scaled up to the House of Commons the bias would be approximately 90 seats.

Removing Scotland also has quite a dramatic impact on the level of pro-Labour positive bias in the rest of Britain. Instead of a negative bias from the geography component Labour now has an advantage of five seats. The simple explanation for this change from the general picture is that Labour is disadvantaged across Great Britain as a whole by its accumulation of wasted votes in the Scottish seats it lost to the SNP. The remaining bias measures associated with malapportionment and abstention are largely unchanged and so this treatment of different geographies certainly puts into perspective how the Scottish outcome damaged Labour's overall position. From the Conservatives' perspective decomposing bias across England and Wales separately moves the party from a positive to a negative bias and thereby emphasises how the Conservative victory was assisted by Labour's Scottish rout. Again, it is the geography component that is key to understanding this change; the Conservatives' positive bias of 28 seats reduces to 16 seats when England and Wales is considered. By separating out the Scottish constituencies we also remove a distinct feature of the Conservative vote distribution in 2015, namely its wasted votes. There are 34 constituencies in Britain where the Conservative vote share is 10% or lower and 25 of those cases are in Scotland.

Conclusions

In terms of overall bias, about 19 seats, the 2015 result is one of the least biased since three-party competition became the norm in the early 1980s. The main explanation for this lies with the collapse in vote and seats for the Liberal Democrats. The most significant change from previous elections, however, is rather the relative positions of the two main parties. This not only helps to explain how the Conservative party won its overall majority but also how it is favourably placed to defend that position at the next election. After the 2010 general election Labour emerged with a net positive bias of 63 seats with the Conservatives benefitting by 13 seats, a gap of 50 seats between the two parties. Labour's positive bias has now fallen to just 12 seats while the gap with the Conservatives has narrowed to only six seats. It is now no longer the case that Labour enjoys a large in-built advantage over the Conservatives that would allow it to win a future election with a smaller share of the national vote than its rival.

Previous analyses of three-party bias from the 1983 election onward show a consistently large advantage for Labour relative to the Conservative party. The reason for this turnaround in relative fortunes is not because Labour has lost its advantage from lower turnout or from the failure of constituency boundaries to track demographic changes – it retains those. Rather, the explanation lies with the important changes in relative vote distributions.

The 2010 election provided a breakthrough for the Conservatives because the party achieved a much more efficient vote distribution than previously and even managed to have a five seat advantage over Labour in the geography bias component. That advantage now extends to 38 seats following the 2015 election. The Conservative party's good fortune arose because of Labour's tendency to accumulate ineffective votes. Although the distribution of Labour's surplus votes are superior to that of the Conservatives this does not counteract the impact of wasted votes, particularly in Scotland.

Some features of the 2015 general election raise methodological issues for the decomposition of three-party bias. The alternative analyses of bias, first with UKIP replacing the Liberal Democrats and then the separate treatments of Scotland and England/Wales, are useful tests of the procedure but reinforce rather than provide additional insight into the events of May 2015. It is stating the obvious that given its substantial vote but a return of just one seat that the system is biased against UKIP. Labour enjoys a positive bias when UKIP replaces the Liberal Democrats as the third party although the Conservatives too are advantaged in respect of vote distribution. The separate treatments of Scotland, England and Wales confirm the damage done to Labour from its defeat in Scotland but that is already readily apparent from the level of wasted votes it acquired in 2015.

While these alternative approaches were prompted specifically by the 2015 election result they do not resolve the substantive methodological issues that have become apparent. While we are assured that substituting UKIP as the third party or dividing the country into separate elements confirms rather than contradicts the standard approach for measuring three party bias it has raised a fundamental question about method selection (two - or three-party?) and the appropriate criteria for selecting parties for inclusion in the analysis. This work is now underway and argues that because bias decomposition is chiefly concerned with the conversion of votes into seats it is the general outcome in respect of seat distributions rather than what may be happening in separate parts of the country that should ultimately determine the choice of method. Following on from this

the aim is to construct guidelines for using the Brookes' method that would facilitate its application for a range of different election results.

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Table 1: Votes and Seats at the 2015 election

	Votes	Votes%	Change +/-	Seats	Change +/-
Con	11,290,554	37.7	+0.8	330	+24
Lab	9,347,273	31.2	+1.5	232	-26
LD	2,415,916	8.1	-15.5	8	-49
UKIP	3,862,775	12.9	+9.7	1	+1
SNP	1,454,436	4.9	+3.2	56	+50
Green	1,150,808	3.8	+2.9	1	-
PC	181,704	0.6	+0.0	3	-
Others	275,956	0.9	-2.6	1	-
Total Vote	29,979,422			632	
Turnout	66.4%				

Note: Northern Ireland is excluded from these figures.

Table 2. The distribution of first and second places at the 2015 general election.

Winning party	Con	Lab	LD	UKIP	Green	PC	SNP	Ind/Oth	Total 1st
	Party in second place								
Con		207	46	75			1	1	**330**
Lab	168		9	44	4	5	1	1	**232**
LD	4	2				1	1		**8**
UKIP	1								**1**
Green		1							**1**
PC	1	2							**3**
SNP	7	41	8						**56**
Total 2nd	**181**	**253**	**63**	**120**	**4**	**6**	**3**		**631**

Note: Total sums to 631 because the Speaker's seat of Buckingham is excluded and also the 18 seats in Northern Ireland.

Table 3: Decomposition of electoral bias at 2010 and 2015 general elections

	Conservative		Labour		LD	
	2010	**2015**	**2010**	**2015**	**2010**	**2015**
Geography	+36	+28	+31	-10	-74	-20
Electorate	-7	-8	+6	+7	+1	+3
Abstention	-11	-12	+13	+16	-6	-4
Minor party	-2	+1	+2	-2	-1	+1
Net interactions	-3	-5	+11	+0	+4	+1
Total bias	13	6	63	12	-76	-19

Table 4: The changing distribution of ineffective votes 2005-2015

		Seats won	(a) Votes per seat won	(b) Ineffective votes per seat won	% (b) of (a)	(c) Total Surplus votes	(d) Total Wasted votes	Total Ineffective votes (sum of (c) and (d))	Total votes
Con	2005	210	41,820	27,872	66.6	1,651,370	4,201,719	5,853,089	8,782,197
	2010	306	34,979	20,596	58.9	2,898,033	3,404,308	6,302,341	10,703,720
	2015	330	34,214	21,845	63.8	4,275,307	2,933,385	7,208,692	11,290,554
Lab	2005	348	27,450	16,518	60.2	2,776,533	2,971,894	5,748,427	9,552,436
	2010	258	33,359	21,886	65.6	2,041,068	3,605,596	5,646,664	8,606,525
	2015	232	40,289	29,211	72.5	2,443,509	4,333,477	6,776,986	9,347,003
Lib Dem	2005	62	96,540	81,816	84.7	321,967	4,750,631	5,072,598	5,985,454
	2010	57	119,942	103,913	86.6	318,040	5,604,975	5,923,015	6,836,718
	2015	8	302,012	288,945	95.7	31,192	2,280,364	2,311,556	2,416,096

Table 5: Electorate measures for 2015 general election

Winner 2015	N seats	Electorate			
		Min	**Max**	**Mean**	**Std Dev**
Conservative	330	45,525	108,804	73,324	6,775
Labour	232	49,821	91,987	69,514	8,152
Lib Dem	8	34,552	72,351	61,894	12,391
Other (incl Speaker)	62	21,769	86,955	69,262	10,797

Table 6: General election turnout in 2015 by winning party

Winner 2015		N seats	Min	Max	Mean	Std Dev
Conservative	Turnout	330	57.0	77.3	68.7	3.4
	Change10/15		-8.7	17.7	0.4	2.1
Labour	Turnout	232	51.3	75.6	61.9	4.6
	Change10/15		-6.3	10.4	0.7	2.5
Lib Dem	Turnout	8	65.5	76.7	70.1	3.9
	Change10/15		-2.6	7.3	1.7	3.5
Other (incl Speaker)	Turnout	62	55.4	81.9	70.6	5.1
	Change10/15		-1.9	11.8	6.8	2.7

Table 7: Decomposition of three-party electoral bias with the inclusion of UKIP

	Con	Lab	UKIP
Geography	15	23	-28
Electorate	-8	7	2
Abstention	-13	12	0
Minor party	6	-3	-2
Net interactions	0	0	0
Total bias	**0**	**38**	**-28**

Table 8: Comparing three-party electoral bias in Scotland and England & Wales

	Scotland			England & Wales		
	SNP	**Lab**	**Con**	**Con**	**Lab**	**LD**
Geography	3	-1	0	16	5	-20
Electorate	0	0	0	-8	5	2
Abstention	0	0	0	-12	14	-4
Minor party	1	0	0	2	-2	0
Net interactions	1	0	1	-3	3	3
Total bias	**4**	**-1**	**1**	**-4**	**+27**	**-19**
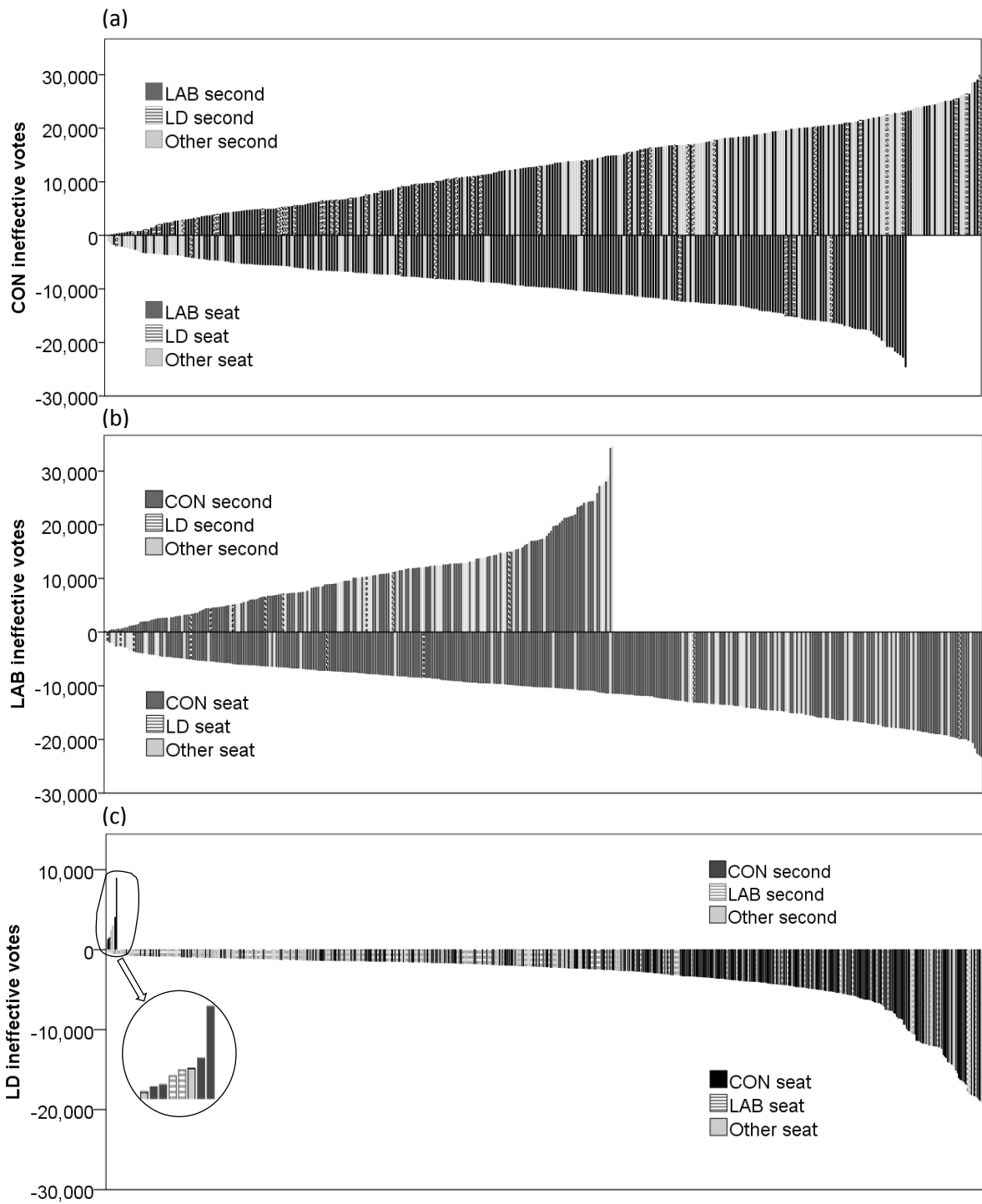
Figure 1: Ineffective votes: (a) Conservative, (b) Labour and (c) Liberal Democrats

(a)

30-40% range: CON won 18 of 76 seats (23.7% success)

(b)

30-40% range: LAB won 20 of 117 seats (17.1% success)

(c)

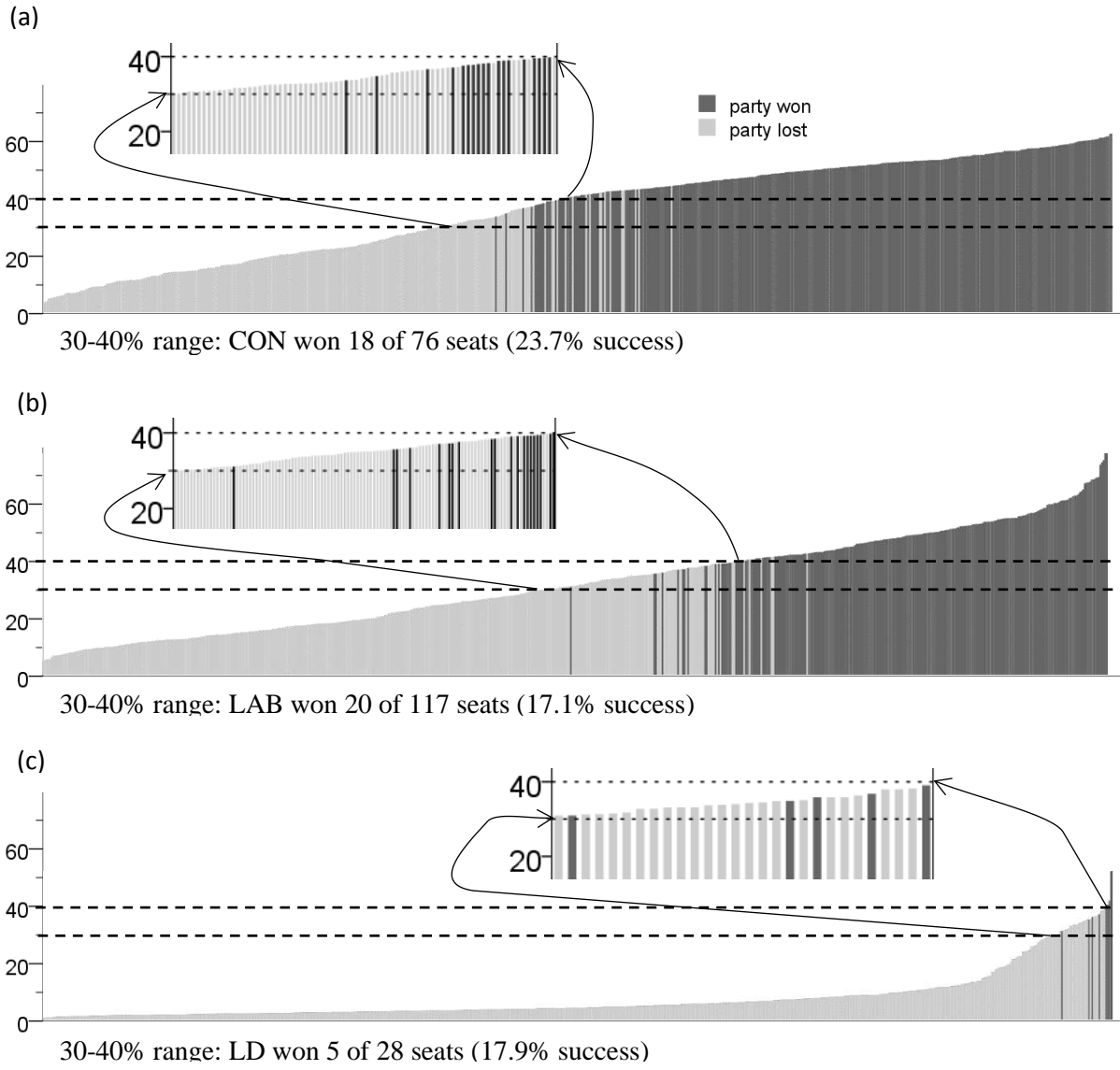30-40% range: LD won 5 of 28 seats (17.9% success)

Figure 2: Ordered parliamentary constituency vote shares (a) Conservative, (b) Labour and (c) Liberal Democrats